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# American Fern Journal

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## The Fern Flora of Northeastern Iowa<sup>1</sup>

T. J. FITZPATRICK

The writer spent the months of June and July, 1895, in this portion of Iowa, camping and traveling along the Oneota or Upper Iowa and the Mississippi rivers. While all available botanical specimens were collected, special attention was given to the ferns, and a good representation was secured. In the following year Mr. Herbert Goddard, then a resident of Decorah, Winne-shiek County, sent the writer a collection he had secured in the vicinity of his home. During the years from 1899 to 1902 the writer had a valued correspondent, Mr. Ellison Orr, who resided at Waukon, Allamakee County. Mr. Orr's fine specimens were accompanied by many valuable critical notes. From these sources of information the following article has been written.

This portion of Iowa possesses for Iowans a peculiarly quiet scenic beauty, being the most broken or rolling, and the most wooded of any portion of the State. Iowa as a whole is a broad expanse of gently undulating prairie, with the characteristic flora modified by civilization. In northeastern Iowa there are more high hills, rugged cliffs, deep ravines, perennial springs, piny woods, and rapid flowing streams than are to be found in any other region of the same size in the State. Being the least affected by cultivation, many natural park sites are available, some of which are destined to be utilized in the near future.

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<sup>1</sup> Contributions from the Department of Botany, University of Nebraska, No. 22

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In the region under consideration, Winneshiek and Allamakee Counties are bounded on the north by Minnesota; and Allamakee, Clayton, and Dubuque Counties lie along the west bank of the Mississippi River. Most of the region lies in what is known as the driftless area, that is, an area of rounded hills with no drift mantle or debris, while all the surrounding region is heavily drift covered.

Geologically this region, generally speaking, is of the oldest in the State. The Saint Croix sandstone of the Cambrian era, the Oneota limestone, the Saint Peter sandstone, the Trenton limestone, the Galena limestone and the Maquoketa shales are successively exposed from the state line southward.

A locality with so varied a topography readily gives many favorite habitats for ferns. Almost every fern native of Iowa may be found and many of them are quite frequent in occurrence.

### OPHIOGLOSSACEAE

*BOTRYCHIUM VIRGINIANUM* (L.) Swartz. Rich woods; frequent; Winneshiek, Allamakee, Clayton, and Dubuque Counties.

### OSMUNDACEAE

*OSMUNDA CLAYTONIANA* L. Rich woods; common; Winneshiek, Allamakee, Clayton, and Dubuque Counties.

### POLYPODIACEAE

*ONOCLEA SENSIBILIS* L. In rich moist soil; frequent; Winneshiek, Allamakee, Clayton, and Dubuque Counties. This species is very abundant on the high islands in the Mississippi River, east of Waukon Junction, Iowa; there is also a small colony in a springy slough near Postville, Iowa.

*ONOCLEA STRUTHIOPTERIS* (L.) Hoffm. (*Matteuccia struthiopteris* (L.) Todaro.) My specimen was collected

in Allamakee County by Mr. Ellison Orr, who reports that the species is abundant in rich soil at the foot of bluffs along the Mississippi River at Waukon Junction and north of Lansing, Iowa, also north of McGregor and near Bulah, Clayton County; there are also occasional plants along Village creek and Oneota river, in Allamakee County, in suitable localities. The species has also been collected in Dubuque County.

*WOODSIA OBTUSA* (Spreng.) Torrey. My specimen from Allamakee County was collected by Mr. Orr, who found it growing on great fragments of rock at the foot of a bluff one-half mile east of Ion, Iowa, on Yellow river. The species has also been found in Winneshiek County.

*WOODSIA ILVENSIS* (L.) R. Br. Professor B. Shimek reports finding this species in two localities northeast from Hesper, Winneshiek County, Iowa.

*WOODSIA SCOPULINA* D. C. Eaton. In 1900 Mr. Herbert Goddard, of Decorah, Iowa, sent me a specimen found nearby, which I at the time reluctantly referred here, but on further examination I am inclined to consider it the preceding species.

*CYSTOPTERIS FRAGILIS* (L.) Bernh. (*Filix fragilis* (L.) Underwood.) Rich calcareous or moist soil in woods; common; Winneshiek, Allamakee, Clayton, and Dubuque Counties.

*CYSTOPTERIS BULBIFERA* (L.) Bernh. (*Filix bulbifera* (L.) Underwood.) Rich calcareous soil; common; Winneshiek, Allamakee, Clayton, and Dubuque Counties.

*ASPIDIUM GOLDIANUM* Hook. (*Dryopteris goldiana* (Hook.) A. Gray.) Winneshiek and Allamakee Counties, in rich woodsy soil in timber growing on bluff sides near Decorah and south of Waukon Junction and north of Lansing, and other similar localities. The species is rather rare even in localities where found.

*ASPIDIUM THELYPTERIS* (L.) Sw. (*Dryopteris thelypteris* (L.) A. Gray.) Winneshiek and Allamakee Coun-

ties; wet soil; frequent. This species is common on marshy islands of the Mississippi River and occasionally in sloughs in this region. I also have a specimen from the neighboring county of Fayette.

ASPIDIUM MARGINALE (L.) Sw. (*Dryopteris marginalis* (L.) A. Gray.) The only specimen I have from this region is from Allamakee County, sent to me by Mr. Ellison Orr, who writes: "Growing on a timbered, shady, steep north slope of a sandstone bluff capped by limestone, about seven miles northeast of Postville on Yellow river, only one colony—a fine one—discovered so far in the county." This is a rare fern for Iowa.

PHEGopteris DRYopteris (L.) Fée. (*Dryopteris dryopteris* (L.) Britton.) I have specimens which I have referred here from Winneshiek and Allamakee Counties. The habitat is moist, rocky woods.

PHEGopteris ROBERTIANA (Hoffm.) A. Br. (*Phegopteris calcarea* Fée. *Dryopteris robertiana* (Hoffm.) C. Chr.) This species closely simulates the preceding, of which it may be a variety or only a form. Specimens are at hand from Winneshiek and Allamakee Counties. The specimens from Allamakee County are from Mr. Orr, who writes: "Very abundant where collected on mossy, partly shaded, rocky talus at foot of, and on north side of high and steep bluff along south side of Yellow river, the only station I know in Allamakee County."

PHEGopteris HEXAGONOPTERA (Michx.) Fée. (*Dryopteris hexagonoptera* (Michx.) C. Chr.) Allamakee County, my specimen is from Mr. Orr, who reports: "A few scattering plants on north side of wooded bluff, Waukon Junction, Iowa."

CAMPTOSORUS RHIZOPHYLLUS (L.) Link. Winneshiek, Allamakee, Clayton, and Dubuque Counties; rocky limestone soil in woods; frequent; often growing on the

tops of large detached boulders at the bottom of deep, shaded ravines.

**ASPLENIUM ANGUSTIFOLIUM** Michx. (*Asplenium pycnocarpon* Spreng.) Allamakee County; in rich shaded wood soil on slopes and at the foot of timbered bluffs at Waukon Junction and at Lansing, Iowa; infrequent or rare; seemingly preferring the bluffs near the Mississippi River. I have also a specimen from Jackson County.

**ASPLENIUM FILIX-FOEMINA** (L.) Bernh. (*Athyrium filix-foemina* (L.) Roth). Winneshiek, Allamakee, Clayton, and Dubuque Counties. Woods and thickets, the most abundant fern and very common throughout this region, as well as all the portions of the State.

**ASPLENIUM ACROSTICHOIDES** Sw. (*Asplenium thelypteroides* Michx. *Athyrium thelypteroides* (Michx.) Desv.) Allamakee and Dubuque Counties. Mr. Orr writes: "Two small colonies near Waukon, one at Lansing, probably rare in the county."

**ADIANTUM PEDATUM** L. Winneshiek, Allamakee, Clayton, and Dubuque Counties; rich woods; common.

**PTERIS AQUILINA** L. (*Pteridium aquilinum* (L.) Kuhn.) Winneshiek, Allamakee, Clayton, and Dubuque Counties; quite common. The habitat is medium dry or moist soil along hillsides covered with thickets or woods.

**PELLAEA ATROPURPUREA** (L.) Link. Winneshiek, Allamakee, Clayton, and Dubuque Counties. Found also in the neighboring counties of Fayette and Delaware. This species prefers limestone cliffs, but grows on sandstone. Mr. Orr notes: "Abundant throughout Allamakee County on all limestone rocks. Shows most luxuriantly where rocks are moist and shaded. Grows abundantly in rock cuts of C. M. & St. P. R. R. west of McGregor. I have seen fine specimens near Harpers Ferry, Iowa."

PELLAEA STELLERI (S. G. Gmel.) Watt. (*Pellaea gracilis* (Michx.) Hook. *Cryptogramma stelleri* (Gmel.) Prantl.) Winneshiek, Allamakee, Clayton, and Dubuque Counties. Frequent to common in limestone or sandstone cliffs. Mr. Orr writes for Allamakee County: "very abundant in moist soil in pockets and crevices of a ledge of St. Peter sandstone, three miles east of Waukon, Iowa, also found at stations near Myron on Yellow river, growing in moist soil in crevices of Trenton limestone."

CHEILANTHES LANUGINOSA Nutt. (*C. féei* Moore. *C. gracilis* (Fée) Mett.) Winneshiek, Allamakee, Clayton, and Dubuque Counties; exposed dry ledges of Oneota limestone, common. This species is abundant on the face of rocky cliffs of a prominent hill in Allamakee County known locally as "Big Elephant."

POLYPODIUM VULGARE L. Allamakee and Clayton Counties. Cliffs, frequent, even common on shaded outcrops of St. Peter sandstone in Allamakee County and on the pictured rocks at McGregor, Clayton County. The species has also been reported from Winneshiek County.

### SALVINIACEAE

AZOLLA CAROLINIANA Willd. This species is found floating in quiet waters. It was found by Miss King in Allamakee County (Plant World, 5: 225). I have specimens from Muscatine and Louisa Counties, from bayous along the Mississippi River, farther south than the region under consideration. I also have specimens collected by J. P. Anderson from Lake Wabonsi in Fremont County, the southwest corner county of the state. This species is rarely collected, but it is probably more frequent than collections indicate, being overlooked.

### EQUISETACEAE

*EQUISETUM ARVENSE* L. Moist, sandy or clay soils, waysides and waste places, common; Winneshiek, Allamakee, Clayton, and Dubuque Counties. This species is extremely abundant on islands of the Mississippi River, often growing in the water.

*EQUISETUM LAEVIGATUM* A. Br. Common in moist, clayey soil, along waysides and banks; Winneshiek and Allamakee Counties.

*EQUISETUM ROBUSTUM* A. Br. This species has been found in Winneshiek, Clayton, Dubuque, Clinton, and Jackson Counties. It occurs frequently in moist to wet soil, along banks.

*EQUISETUM HYEMALE* L. Specimens from Winneshiek, Allamakee, and Dubuque Counties have been referred here.

### LYCOPODIACEAE

*LYCOPodium LUCIDULUM* Michx. This species has been found in moist woods near Hesper, Winneshiek County.

### SELAGINELLACEAE

*SELAGINELLA RUPESTRIS* (L.) Spring. Dry, rocky soil; frequent at least locally; Winneshiek and Dubuque Counties.

### ISOETACEAE

*ISOETES MELANOPODA* J. Gay. This species has been collected in Clinton County.

BETHANY, NEBRASKA.